

**METHOD AND APPARATUS FOR DETERMINING ONE OR MORE  
STATISTICAL ESTIMATORS OF CUSTOMER BEHAVIOR**

**Abstract**

5           Businesses typically have large amounts of data about customer transactions and  
other customer information which is not fully utilized. The present invention provides a  
means of using this information to make predictions about future customer behavior, for  
example by estimating the probability that a customer will leave a bank. Using these  
predictions the business is able to take action in order to improve its performance. Using  
10   customer data a Bayesian statistical model is generated and this model used to generate  
statistical estimators of customer behavior. The statistical model is formed using hidden  
Markov model techniques by clustering customer data and attributes (e.g. Age, sex, salary)  
into a finite number of states. The number of states is unobserved and considered random.  
Bayesian prior probability distributions are specified and combined with the data to produce  
15   Bayesian posterior probability distributions. Using these Bayesian posterior probability  
distributions the statistical estimators are obtained. For example, Monte Carlo sampling  
techniques are used or alternatively the posterior distributions are calculated numerically or  
analytically.